



US 20150139354A1

(19) **United States**(12) **Patent Application Publication**
Ylamurto(10) **Pub. No.: US 2015/0139354 A1**(43) **Pub. Date: May 21, 2015**(54) **POLAR NOISE SHAPING**(71) Applicant: **Nokia Corporation**, Espoo (FI)(72) Inventor: **Tommi Ylamurto**, Los Gatos, CA (US)(73) Assignee: **NOKIA CORPORATION**, Espoo (FI)(21) Appl. No.: **14/081,862**(22) Filed: **Nov. 15, 2013****Publication Classification**(51) **Int. Cl.**
H04B 1/04 (2006.01)(52) **U.S. Cl.**CPC **H04B 1/0475** (2013.01); **H04B 1/0466**
(2013.01)

(57)

ABSTRACT

Methods and apparatus, including computer program products, are provided for polar noise shaping. In one aspect there is provided a method. The method may include receiving a first error signal representative of a first noise including a first quantization noise carried by a quadrature signal; receiving a second error signal representative of a second noise including a second quantization noise carried by an in-phase signal; and determining one or more bits in a polar domain, wherein the one or more bits cancel a portion of the first noise and the second noise represented by the first error signal and the second error signal. Related apparatus, systems, methods, and articles are also described.

100